Gastric perforation secondary to ingestion of a plastic bag

YM Goh, IM Shapey, K Riyad

East Lancashire Hospitals NHS Trust, UK

ABSTRACT

Foreign body ingestion is a common presentation in clinical practice, seen predominantly in children. Most foreign bodies pass through the gastrointestinal tract without any additional morbidity. We present a case of gastric perforation secondary to the ingestion of a small plastic bag. We discuss the likely pathophysiological process underlying perforation secondary to plastic bag ingestion, which is most commonly associated with the concealment of narcotics.

KEYWORDS

Gastric perforation – Foreign body

Accepted 11 October 2015; published online XXX

CORRESPONDENCE TO

Iestyn Shapey, E: i.m.shapey@doctors.org.uk

Foreign body ingestion is a common presentation in clinical practice, seen predominantly in children. Most foreign bodies pass through the gastrointestinal tract without any additional morbidity; perforation occurs in less than 1% of cases.¹ When gastrointestinal perforation does occur, however, the ileocaecal and rectosigmoid regions are most frequently affected. We present a case of gastric perforation secondary to the ingestion of a small plastic bag.

Case history

A 62-year-old man presented to the emergency department with dizziness and a 4-day history of haematemesis and fresh rectal bleeding. Over the four months prior to admission, he had experienced melaena. He had a past history of alcohol excess, depression and asthma. On examination, he was pale and unkempt. His vital signs, although abnormal (heart rate 106bpm, blood pressure 106/60mmHg, temperature 38.1°C), remained very stable throughout his assessment in the emergency department. On examination, he was comfortable with a completely soft and non-peritoneal abdomen but mild discomfort in the epigastrium. Rectal examination was unremarkable.

Review of the patient's medical notes revealed a previous oesophagogastroduodenoscopy performed the previous year for haematemesis. No significant abnormality was seen other than mild inflammation at the first part of the duodenum.

On this admission, blood results were markedly deranged (white cell count $25.1 \times 10^9/l$, haemoglobin 64g/dl, C-reactive protein 247mg/l, platelets $1,073 \times 10^9/l$). Arterial blood gas tests demonstrated alkalosis (pH 7.52, pCO_2 5.15kPa, pO_2 9.45kPa on air, HCO_3^- 30.5mmol/l, base excess 6.9mmol/l).

Pneumoperitoneum was seen on an erect chest x-ray. Treatment was commenced comprising intravenous omeprazole, tranexamic acid, antibiotics and a blood transfusion.

Owing to the patient's conflicting signs of gastrointestinal bleeding versus perforation in an otherwise stable and comfortable patient (despite the presence of pneumoperitoneum), the first invasive and diagnostic intervention was considered carefully. An emergency gastroscopy was undertaken in the first instance, which revealed grade B oesophagitis, a bezoar (black plastic bag) and a large perforating antral ulcer immediately proximal to the pylorus (Fig 1).

A laparotomy was performed and approximately 2–3l of purulent fluid was found in the peritoneal cavity. The perforation was noted over the lesser curve of the stomach and was sealed by the left lobe of the liver (Figs 2 and 3). A distal gastrectomy with Roux-en-Y gastroenterostomy was performed. The patient subsequently developed an anastomotic leak, which (following a trial of conservative management) required a return to theatre for refashioning of the anastomoses, a venting gastrostomy and intraperitoneal drainage. He was discharged home following a prolonged hospital stay.

Discussion

Foreign body ingestion is common in children but occurs infrequently in the adult population. However, psychiatric disorders, developmental delay, alcohol intoxication and attempting internal concealment of illegal substances are among the more prevalent aetiologies in adults. Perforation of the gastrointestinal tract by an ingested foreign body is rare and occurs in less than 1% of all cases.¹ The

Figure 1 Endoscopic view of the plastic bag in the stomach

ileocaecal and rectosigmoid regions are most commonly affected while gastric perforation is relatively rare.²

Plastic bag ingestion is usually seen in association with concealment of illegal substances (often referred to as 'body packing'), and has been reported in both children and adults.⁵ Such packages may rupture internally, with

Figure 2 Distal gastrectomy specimen showing site of the perforation through the lesser curve of the stomach

Figure 3 Left lobe of the liver demonstrating inflammatory changes immediately adjacent to the site of perforation

leakage and absorption of the contained substance leading to narcotic overdose and often death.

Patients undergoing surgery for body packing are rare, the most common indication being intestinal obstruction or narcotic toxicity.⁴ When it occurs, gastrointestinal perforation is most common in the distal small bowel or sigmoid colon, and echoes the findings of MacManus.² In our case, the patient denied any knowledge of ingesting the plastic bag despite symptoms of gastric mucosal irritation over several months prior to presentation. The contents of this bezoar remain unclear.

Perforation secondary to ingested bags is likely to occur from one of two pathophysiological processes. Most commonly, rupture of narcotic containing bags (usually cocaine) will lead to perforation secondary to the localised ischaemia resulting from profound vasoconstrictory effects of the drug at the site of absorption.⁵ Pressure necrosis from the plastic bag provides the other possible explanation and is the most likely explanation in this case given the duration of symptoms.

References

1. Schwartz GF, Polsky HS. Ingested foreign bodies of the gastrointestinal tract. *Am Surg* 1976; **42**: 236–238.
2. MacManus JE. Perforations of the intestine by ingested foreign bodies. *Am J Surg* 1941; **53**: 393–402.
3. Traub SJ, Hoffman RS, Nelson LS. Body packing – the internal concealment of illicit drugs. *N Engl J Med* 2003; **349**: 2,519–2,526.
4. Silverberg D, Menes T, Kim U. Surgery for 'body packers' – a 15-year experience. *World J Surg* 2006; **30**: 541–546.
5. Martínez-Vieira A, Camacho-Ramírez A, Díaz-Godoy A *et al*. Bowel ischaemia and cocaine consumption; case study and review of the literature. *Rev Esp Enferm Dig* 2014; **106**: 354–358.